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Featuring:

Paula M. Walker
on Victims and Witnesses

Marc Racicot
on Fair Trial and Free Press

Arnold Melnikoff
on Trace Evidence

Robert Nieuwenhuyse
on Investigating Arson

And more...

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Publisher
Mike Greely, Attorney General of Montana

Editor
Lonn Hoklin, Executive Assistant to the Attorney General

Associate Editor
Patrick Driscoll, Chief Assistant Attorney General

Contributing Editors:

For the Prosecution
Marc Racicot, Chief
County Prosecutor Services Bureau

Scientific Investigations
Ronald Rivers, MD
State Medical Examiner

Motor Vehicles
Larry Majerus, Administrator
Motor Vehicle Division

Criminal Investigations
Gary Carrell, Chief
Criminal Investigation Bureau

Fire and Arson
Bruce Houston
Acting State Fire Marshal

Traffic Enforcement
Colonel Robert Landon, Administrator
Montana Highway Patrol Division

Identification
Mike Miller, Chief
Criminal Identification Bureau

Law Enforcement Services
Fritz Behr, Administrator
Law Enforcement Services Division

The Montana Board of Crime Control
Mike Lavin, Administrator
Crime Control Division

Networking
John Mathews, Administrator
Data Processing Division, Department of Justice

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From the Editor:

Behr Receives Honor for Excellence

"The criminal justice system relies heavily on the personal dedication and service that countless people render beyond the requirements of their formal duties, without hope of remuneration or recognition."

So begins the memorandum of April 2nd, 1986, that Attorney General Mike Greely issued to the Montana Department of Justice, creating the Attorney General's Meritorious Service Citation. Eligible recipients include virtually every employee and officer of every criminal justice agency in the state—police officers, administrators, clerks, prosecutors, secretaries and forensic scientists.

"Though the printed Citation and the accompanying letter bring no monetary benefit to the recipient, they do represent recognition and gratitude for excellence in service beyond the requirements of duty," the Attorney General wrote. *"My intention is to be very stringent in adhering to the evaluation criteria, in order to insure that the Citation achieves and maintains a high level of prestige."*

In awarding the very first citation later the same week, the Attorney General set a high standard for future recipients. It went to Fritz O. Behr, Administrator of the Law Enforcement Services Division of the Department of Justice, in recognition of his yeoman's work as acting administrator of the Montana Law Enforcement Academy since last fall.

Unquestionably, Mr. Behr's tenure at the Academy met the standard of service beyond the requirements of duty. Responding to the Attorney General's directive to reorganize the Academy and effect new policies aimed at better training, Mr. Behr lived out of a suitcase for nearly six months, commuting weekly between Bozeman and his home in Helena.

Separation from wife and family, however, did not in itself justify the award. The quality of Mr. Behr's service did. In presenting the citation at the graduation ceremony of the Academy's basic course, the Attorney General lauded Mr. Behr's achievements during the unsettled time spent in search of a permanent Academy administrator. Morale soared among the Academy staff. An extraordinarily detailed evaluation of procedures and staff positions reached completion. Ideas grew for new and better ways of doing things. Training improved.

The new administrator, William Westfall, an accomplished professional in his own right, declared that Mr. Behr's efforts have helped him greatly in charting a new course for the Academy. Clearly, Mr. Behr's consummate administrative skill and leadership ability have enabled him to guide the Academy through a potentially difficult period. Having made the Academy better, and having sacrificed much to do so, he not only deserves the citation, but also sets the standard for awarding it in the future.

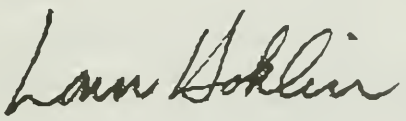
The spring issue of MJQ features helpful observations from Paula M. Walker on victims and witnesses of crime ("Understanding the Victim," page 2). A former press secretary to the Governor, Ms. Walker is now a free-lance writer and consultant.

Arnold Melnikoff, Chief of the Montana Laboratory of Criminalistics Bureau, is a familiar name throughout Montana's criminal justice community. His offering in this issue, "Trace Evidence," is must reading for criminal investigators and prosecutors (**Scientific Investigations**, page 4).

Of interest to law enforcement administrators and investigators is Michael Shortell's article on investigating homicides that are linked to conspiracies (**Criminal Investigations**, page 9). Mr. Shortell is the Assistant Chief of Police in Havre, Montana. His article is the first of a series on a subject of major concern to Montana's sheriffs' offices and police departments, particularly in rural jurisdictions.

Elsewhere in this issue, Marc Racicot tells prosecutors and police how to deal with the news media during the course of criminal investigations and trials (**For the Prosecution**, page 11). Karen Nelson and Dan Hawkins describe the computerized "person" files of the National Crime Information Center (**Networking**, page 14). Robert Nieuwenhuyse provides a "how-to" for the arson investigator (**Fire and Arson**, page 17). And Robert Griffith sheds light on the importance of productive investigation of traffic accidents (**Traffic Enforcement**, page 20).

A final word: MJQ's survival beyond its initial run of four quarterly issues depends largely on the response that it receives from the criminal justice community. If you find it useful, write us a letter. In this era of crisis with the state budget, hearing from you would help in more ways than one.



Understanding the Victim

by Paula M. Walker

Special Report

"The victim has no rights, but the son-of-a-gun who did the crime gets all the rights." That remark, uttered in grief and anger by the father of a Great Falls murder victim, typifies the frustration felt by crime victims when they come face-to-face with the criminal justice system. For many victims, it is their first contact with criminal justice procedures. For many, it is a rude awakening.

The trauma they feel upon being thrown into the judicial system often rivals the trauma caused by the crime. Suddenly they are assaulted with legal jargon and held hostage by continuances, delays and other legal procedures they don't understand. It is often said that victims of crime are twice victimized, once by the criminal and once again by the criminal justice system.

"To be a victim at the hands of the criminal is an unforgettable nightmare. But to then become a victim at the hands of the criminal justice system is an unforgivable travesty," said crime victim Robert Grayson. "It makes the criminal and the criminal justice system partners in crime."[1]

Victims have long been the forgotten parties in criminal prosecutions. They were there, but *not* there. Heard, but not seen. They were expected to testify at the trial, reliving in public painful memories of the crime. Then they were expected to disappear.

While victims agree that bringing the criminal to justice is a major concern, it is not their *only* concern. Crime victims and their families often continue to suffer long after the offender has been locked up. Psychological distress, physical injuries or the loss of a loved one may disrupt a victim's life for years.

The victim movement in this country reflects a growing recognition that the justice system should treat victims with more compassion than a piece of evidence. "In the early '80s, the passive suffering of victims began changing to activism. Victims organized themselves into networks and coalitions and began protesting—that the system pays many of the accused's expenses but none of the accuser's; that it sometimes seems to protect the accused's rights at the expense of the victim's; and that it neglects the psychological suffering of the victims of crime."[2]

Montana law now acknowledges that the criminal justice system's concern for the victim should extend beyond courtroom testimony. In 1985, the Montana Legislature passed Senate Bill 451 to ensure the fair and proper treatment of victims and witnesses of crime. The law, Title 46, Chapter 24, MCA, requires criminal justice and law enforcement personnel to keep victims and witnesses of felony crimes informed of the status of criminal proceedings; it also requires the justice agencies to inform victims of assistance available to help them deal with the financial and psychological impacts of the crime.

Glacier County Attorney James C. Nelson likens the victim's first-time experience with the criminal justice system to major surgery. "You don't know what to expect. You're afraid to ask stupid questions. You want to ask questions, but you don't know what to ask," he said.

The notification requirements of the law provide one way for victims to familiarize themselves with criminal procedure. For those who work in the criminal justice system daily, the ins and outs of criminal procedure are a matter of form. But for victims, it is often a frightening and confusing process. Unless prosecutors keep them informed of procedures and scheduling changes, victims are left in the dark.

The experience of one Montana family is a good example of the need for notification requirements. The family went to the courthouse to testify at a hearing on the murder of their daughter. When they arrived, they discovered the hearing had been postponed. No one had told them of the postponement—they read about it on the courthouse bulletin board. Another time they were sitting in the hall, waiting to testify at the trial. They saw the defendant's mother and girlfriend jumping up and down elatedly. It wasn't until they were allowed inside the courtroom that they learned a mistrial had been declared. Says the father, "We found out more from the newspapers and TV than from the police or county attorney."

While, as in the case of the mistrial, the swiftness of some legal decisions might preclude personally notifying victims in every instance, the impact of human contact cannot be overestimated in dealing with victims.

James Nelson said he has made an effort to become more sensitive to victims' needs. After passage of Senate Bill 451, he developed a letter to victims that notifies them of what to expect from the criminal justice system. Several other Montana county attorneys have adopted it as a means of satisfying some of the requirements of the new law.

Nelson acknowledges the difficulty of fully appreciating victims' feelings. "Unless you've gone through it, you have no idea what they are going through," he said. "I doubt many of us have." But, says the Glacier County Attorney, victims do appreciate any attention criminal justice personnel can give them.

"I tried to treat them as human beings who had suffered a terrible misfortune," he said. "Human concern was important to them. And looking back on it, it did not take that much time."

Time is a concern of some county attorneys who have given the new victim/witness law a lukewarm reception—time and money. Some fear that the new law will create an added burden for prosecutors without providing the funds to pay for victim/witness assistance programs. A survey of county attorneys made by the Attorney General in February showed that half of the responding offices had no formal victim/witness assistance programs.[3]

"To be a victim of crime is an unforgettable nightmare."

As one rural county prosecutor put it, "A *program* in a single-person, part-time position is impossible."

It appears, however, that most counties have made attempts to satisfy the notification requirements of Senate Bill 451. All but one of the surveys returned said their offices explained criminal procedure to victims as it related to their cases. A total of 32 of the 43 county attorneys who responded to the survey said they notified victims of their case status from beginning to end. Seven more said they notified victims in some cases. Only three said they had no process for notifying victims.

As a result of the law, Attorney General Mike Greely has initiated a project to help prosecutors assist victims. The Attorney General's office is preparing a handbook for prosecutors to distribute to victims and witnesses. The handbook will explain victims' rights under the new law; describe criminal procedures; and list treatment programs available on a statewide and community basis. In addition, the Attorney General's office is preparing a set of guidelines for county attorneys to use in helping victims and witnesses cope with the criminal justice system. Various law enforcement agencies throughout the state are also undertaking victim/witness projects.

Despite the reservations of some, advocates who have worked with victim/witness assistance programs in the criminal justice system say the advantages outweigh any inconvenience the law might cause. John Collins, district attorney of Yamhill County, Oregon, was one of the first prosecutors to implement a victim/witness program in Oregon. Speaking to a group of Montana prosecutors in early April, he urged them to adopt programs in their counties. Better communication between prosecutors and victims can make a stronger case, he said.

"Victims are better communicators, better witnesses when they trust you," he said. "It is less traumatic on the victims and, hence, they communicate better to juries."

Collins said better understanding of the victim's perspective can also also enhance a prosecutor's performance.

"It provides a spark of prosecutorial zeal to help argue your case better," he said. "When you've got it in the heart, it gives you the incentive to go for the throat."

Collins and Nelson agree that establishing rapport with victims can help prosecutors deal with sensitive issues during a criminal case. Plea bargaining and restitution are two areas that often cause victims chagrin. Some victims view plea bargaining as an insult, believing that it diminishes the severity of the offender's actions. Prosecutors, however, view it as a useful tool to ensure that the offender receives some sort of punishment.

Both Collins and Nelson say that just taking the time to explain why a case is being plea bargained helps allay the victim's anger.

"I can't name a single victim who has rejected plea bargaining as evil after I explained it to them," said Collins.

Montana's victim/witness law requires prosecutors to consult with victims of felonies about plea negotiations. If the criminal justice system takes the initiative in recognizing victims' rights, it might forestall moves by angry victims to weaken existing laws that protect defendants' rights.

At the very least, laws ensuring fair treatment of victims and witnesses might encourage criminal justice professionals to realize that the plight of the victim does not begin and end at the courthouse steps. Said the brother of a homicide victim, "If there's one thing I've learned from this, it's the difference between the words 'sympathy' and 'empathy.' They should make sure that people in law enforcement know the difference. It's a whole different thing to feel what a person is feeling rather than just feeling sorry for them."

REFERENCES

[1]Testimony of Robert Grayson, crime victim and then chairman of the New Jersey Council on Crime Victims, before the President's Task Force on Victims of Crime in Boston, Sept. 21-22, 1982. Quoted in the Final Report of the Task Force issued Dec. 1982, p.9.

[2]Cynthia Crossen, "Crime Victims Are Winning Share of Fines, Role in Judicial Process," *The Wall Street Journal*, 15 April 1986.

[3]Of the 56 surveys sent to county attorneys, 43 responses were received.

Ms. Walker is the coordinator of the Attorney General's Victim/Witness Project.

Scientific Investigations

Trace Evidence

Arnold Melnikoff

"Just what is trace evidence?" many a criminal investigator has asked.

Many a forensic scientist has been at a loss to give an answer that is universally accurate. *Trace evidence* is a catchall term that usually means very small pieces of debris associated with a crime victim's clothing or body, the suspect's clothing or body, or with some part of the crime scene. It is evidence that criminal investigators usually cannot identify or characterize through visual examination alone.

Trace evidence is important evidence. It can tie a suspect to a victim or to a crime scene. This discussion will deal with hair, fiber, paint, glass and soil—all of which are materials that the crime laboratory can examine as trace evidence. Human tissue, blood and other body fluids can also fall into the category of trace evidence, but these will be the subjects of a future MJQ article on forensic serology.

Forensic Hair Examination

Hair, as nearly everyone knows, grows on the skin of all mammals, providing protection and insulation. A single hair grows from an organ called a *follicle*. The actual substances that make up hair tissue are proteins called *keratins*, which--because of their chemical structure--make hair very resistent to biological and chemical breakdown.

Microscopic examination of hair can yield information that is important to the process of determining guilt or innocence in a court of law. The first question that a forensic hair examiner wants to answer is whether the hair sample in question is from a human being. If it proves to be nonhuman in origin, the examiner wants to find out what biological family or species it came from. This feat is possible through analysis of the *scale pattern* on the outside covering of the hair and the microscopic characteristics of the pigment and medulla pattern *(figure 1)*.

Human hair, unlike other mammals', has no *medulla* at all, or it has a comparatively small *medullary index* , which is the width of the medulla divided by the width of the cortex (thickness). In most nonhuman mammals, the scale pattern is definite and regular, but human hair shows a scale pattern that is completely irregular. Individual humans produce hair that is very different from that of their fellow humans in shape, length, thickness and color; for that matter, the same individual grows hairs of remarkably different characteristics on various parts of his own body. Hair from the head and the pubic area have the greatest number of individual microscopic characteristics, and for this reason are the most useful of all types in determining whether a questioned hair sample comes from a specific individual.

The forensic hair examiner can often help the criminal investigator by identifying the race of a suspect who has inadvertently left a hair sample at the scene of a crime *(figure 3)*. Considerably more difficult is determining the racial origin of an individual of *mixed* race.

Using a forensic comparison microscope (which allows direct comparison of two individual hairs), the forensic hair examiner can usually determine whether a hair sample could have come from a specific individual, a process that involves comparing the unknown sample to a sample taken from the individual. The objective is to determine whether the two samples have the same range of microscopic characteristics. These characteristics include the thickness and orientation of the cuticle scales; the shape, color and orientation of pigment granules; and the shape, color and frequency of the medulla. Other microscopic features are evidence of artificial colors or curling, and the presence (or absence) of *cortical fusi* and *vacuoles (figure 2)*. By examining the root of the hair under the microscope, the examiner can determine whether the hair sample has been pulled out forcibly.

Investigators and prosecutors should bear in mind that

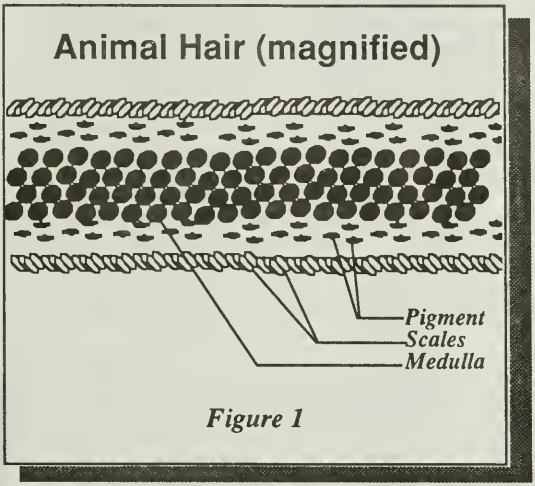


Figure 1

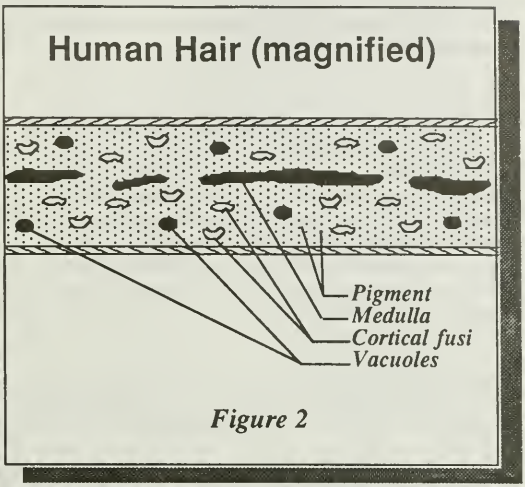


Figure 2

hair standards are very important to the success of a forensic hair examination. Stated simply, the hair standard is the criterion—in terms of quality, quantity and type—of the samples to which the examiner will compare the questioned samples.

Suppose that a police department wants a microscopic comparison of a suspect's hair with samples found at the scene of the crime. In order to ensure a proper comparison of head hair, the investigating officers should obtain a representative sample from the suspect's head, i.e., at least five hairs pulled from each of the following areas: the top of the head; the left and right sides of the head; and the back of the head. In order to ensure a proper comparison of pubic hair, the investigators should obtain at least 15 hairs sampled at random from the suspect's entire pubic area.

As a forensic hair examiner I have handled more than 500 cases in which I have compared hair samples from two or more people. I have seen only five cases in which two people's head hair samples were so similar that a microscopic examination could not distinguish one from the other. I have seen only three cases in which two people's pubic hair were so similar as to defy microscopic differentiation.

Some people make the mistake of equating the accuracy of forensic hair examination to fingerprint examination. Latent fingerprint identification is more accurate, because the fingerprint examiner is comparing a *specific* fingerprint impression (taken at the crime scene, perhaps) to the pattern on a *specific* finger of an individual. The forensic hair examiner, however, must compare a sample to a whole range of hair characteristics. Though the hair examiner cannot conclude that the hair in question came from a specific individual, he can conclude that it came from a given individual *or another individual* whose hair has the same range of characteristics.

Suppose that a rape occurs, and investigators recover samples of the perpetrator's head hair and pubic hair from the scene. The forensic hair examiner subsequently determines that *both* the samples—head hair *and* pubic hair—have the same range of characteristics as the suspect's head hair and pubic hair. This identification is more specific, and legally more valuable, than an identification based on examination of either head hair or pubic hair alone. Identification of the two kinds of hair are two independent procedures which show that the samples taken from the scene match the suspect's range of characteristics for *both* head hair and pubic hair. The combination of these two results show a very high probability that the head hair and pubic hair in question came from the suspect.

Forensic hair examination is very tedious, time-consuming and therefore costly to the criminal justice system. The average case involves microscopic examination of 150 separate hairs, but some cases involve examination of as many as 500 separate hairs. Forensic hair examination should thus be the last resort, the final step after all other forensic procedures have failed to relate the suspect to the crime adequately.

In the interest of employing scarce resources wisely, investigators should use common sense in calling upon the services of the crime lab. They should not, for example, ask the crime laboratory to examine hairs from a suspect who lives in the same dwelling as the rape victim. The suspect's hair will obviously be scattered throughout the dwelling, and perhaps throughout the car that the victim has used. Samples of the suspect's hair could have been inadvertently carried on the victim's clothing to the scene of the crime. In short, forensic hair examination in such a case will not produce good evidence.

Forensic Fiber Examination

One of the most highly publicized murder cases in recent years was the Wayne Williams case in Atlanta, Georgia,

(next page)

in which *carpet fibers* were the major physical evidence that linked Williams to a string of child homicides. Because of the Wayne Williams case, the American public became passingly familiar with *forensic fiber identification.*

Fibers fall into one of three categories, depending on their origin: *plant, animal* and *man-made.* There are, of course, subcategories *(figure 4).* Scientists can usually identify plant and animal fibers by their microscopic *morphological* characteristics, i.e., their organic form and structure as they appear under the microscope. Forensic scientists use polarizing microscopes to identify man-made fibers, measuring the *birefringence* and *refractive index.* Birefringence is the refraction of light in two slightly different directions to form two rays, a process that occurs with measurable variations among different materials. Employing the process of *infrared spectroscopy,* the forensic scientist can identify all man-made fibers, and in some cases even distinguish the products of different manufacturers. (Brand names, however, can lead to confusion. DuPont manufactures acrylic fibers and sells them under the brand name Orlon; Monsanto manufactures and sells acrylic fibers under the brand name Acrilan. DuPont calls its polyester fibers Dacron, while Eastman Chemical calls its polyesters Kodel.).

Identifying an unknown fiber is the forensic examiner's first step in the scientific investigation. Identification enables the examiner to compare the sample in question to known fibers of the same chemical composition. The examiner compares the diameters, cross sections, dye components and other factors to determine whether the fibers could have come from the same source. A word of caution, however: Though a forensic examination may not be able to distinguish between a questioned fiber and a known fiber, the examiner cannot state unequivocally that the two came from a specific garment; the questioned fiber sample, after all, could have come from any of the thousands of garments manufactured with that fiber.

Most of today's living room carpet is made of nylon fiber, and most nylon fibers are *trilobular* in cross section (brand names include Anso, Anso IV, Antron, Cellanese 81, Ultron and others). The forensic examiner can determine the manufacturer by matching a cross sectional shape of the carpet fiber to a chart that breaks down the various cross sections and trilobular shapes by manufacturer.

Returning to the Wayne Williams case: The suspect in that case bought a nylon carpet that was multicolored with a unique cross section, and installed it in his home. Manufactured in Europe, this nylon carpet fiber had received only limited distribution in Atlanta. Only a few carpets of the same fiber color and cross section were sold in the Atlanta area, and criminal investigators accounted for all of them. Investigators found these unique fibers in the trunk of Williams' car; they found the fibers on the clothing of homicide victims who had been removed from the river. Wayne Williams was convicted of homicide.

In Montana recently, a jury found a defendant guilty of conspiring to murder her husband–largely on the basis of carpet fiber evidence. The defendant was not present in the motel room when her husband died; two men confessed to committing the murder. After committing the crime they returned to the defendant's home, they said, and burned their bloody clothes in the upstairs fireplace. Wanting to ensure that investigators would find no trace of the clothes, the defendant collected the debris and took it to the downstairs fireplace to burn it more thoroughly. Unfortunately for her, investigators sifted the debris in the downstairs fireplace and found partially burned nylon carpet fiber that matched the carpet in the motel room where her husband died.

Racial Characteristics of Hair [1]

Race	Diameter	Cross Section	Pigmentation	Cuticle	Undulation
Negroid	60-90 *m.*	flat	dense & clumped	---------	prevalent
Caucasoid	70-130 *m.*	oval	evenly distributed	medium	uncommon
Mongoloid	90-120 *m.*	round	dense & auburn	thick	never

Figure 3

Forensic Glass Examination

Most people know glass when they see it, but few know how it is made. The process is relatively simple: Heat sand, soda and lime together until the mixture becomes transparent. Then let it cool and harden. It becomes glass, one of mankind's earliest manufactured materials.

The crime laboratory most often analyzes glass samples that are chips (from windows, headlights or bottles) or fibers (from glass insulation or glass-insulated filters). Often the forensic scientist's major concern is whether the questioned sample of glass and a sample of known glass are from a common source. But the forensic scientist cannot say with certainty whether two or more samples came from only one possible source unless he can make a fracture match that shows that two pieces of glass were once part of the same piece. Through

careful measurement and comparison of the *refractive index*, density and other physical properties, the forensic scientist can often state that a sample of questioned glass and a sample of known glass *could* have come from a common source. The *refractive index* is the speed of light in a vacuum compared to its speed in another transparent medium, like glass, expressed in a ratio *(figure 5)*. After 1960, glass makers began using the "float glass" process in manufacturing, which enables them to control variations in sheet glass of no more than .0002 in refractive index. This means that the refractive index in glass from one maker varies hardly at all from one batch to another, a fact that improves the crime laboratory's ability to trace the origin of a sample.

Multi-element analysis is yet another procedure for determining whether samples of glass have a common source. While very useful, the process is costly, in that it requires an X-ray fluorescence spectrophotometer or an ion microprobe to measure precise quantities of elements that are present in the glass samples without destroying the samples themselves. The cost of these two instruments is in the range of $60,000-$120,000, and is well beyond the reach of many crime laboratories. The Montana Laboratory of Criminalistics does not yet have this multi-element, nondestructive capability.

Forensic Paint Analysis

Paint can also be a useful tool in solving crimes. Crime laboratories frequently compare crime-scene samples of paint with known samples to determine whether they are microscopically and chemically indistinguishable.

A painted surface usually has multiple layers of substance, one of which is often a thin primer. An object that someone has repainted many times will have many separate paint layers. The first stage of a forensic paint examination is a microscopic inspection of the paint layers to determine the thicknesses and colors of each layer of paint and primer. If the questioned paint sample and the known sample have four or more layers that match, the examiner concludes that there is a high probability that the two came from the same source.

The next step is the chemical analysis of the individual layers of paint and primer, using either *infrared spectroscopy* or *pyrolysis gas chromatography*, or both. The former measures the molecular vibration pattern within a material, and is very useful in determining the *type* of paint present (acrylic, lacquer, urethane, epoxy, acrylic and vinyl resins, etc.). The latter, or pyrolysis gas chromatography, requires only a very small sample, and can differentiate similar paints that came from different manufacturers. The process involves thermal decomposition of the paint, which forms a large number of different chemical constituents. The forensic scientist then analyzes the decomposition products, using gas chromatography, in the same instrument. The one major disadvantage of this process is that it is a *destructive analysis procedure*. It destroys the sample in order to analyze it.

Paint pigments are usually inorganic compounds. Forensic scientists use many different instruments to analyze them, the most useful of which is the X–ray fluorescence spectrophotometer, since it is nondestructive and requires only a very small sample. This instrument enables the forensic scientist to tackle the most difficult kind of paint analysis—examining a paint smear in which a very small amount of paint is spread out over a relatively large area. Because X-ray fluorescence analysis is nondestructive, it is especially suitable for dealing with small paint smears. By contrast, pyrolysis gas chromatography requires a larger sample,

(next page)

PLANT FIBERS:
cotton, flax, hemp, kapok, manilla, sisal

ANIMAL FIBERS:
angora, mohair, silk, wool

MAN-MADE FIBERS:
acetate, acrylic, glass, modacrylic, nylon, nytral, olefin, polyester, rayon, spandex, synthetics

Figure 4

"Trace evidence is important evidence. It can tie a suspect to a victim or to a crime scene."

and could require *all* the paint in the smear, which is then destroyed in the testing process. Needless to say, destruction of the evidence in order to analyze it could have a negative legal effect on a criminal case.

Forensic analysis of automobile paint can be helpful to the investigation and prosecution of vehicular crimes. When a car collides with something, it often transfers some of its paint to that object. In taking a known sample of paint from a vehicle in order to facilitate a forensic comparison with a questioned paint sample, the investigator should follow a simple rule of thumb: Always take a sample from an area on the painted surface that is *as close as possible* to the area from which the transfer of paint occurred, i.e., the impact area. This rule of thumb is especially important with older vehicles, because differences in rates of paint oxidation, as well as the likelihood over time of repairs and body work that required repainting, mean that paint samples from different areas of the vehicle's surface are chemically different from one another.

A fatal hit-and-run case happened some years ago in eastern Montana. The state crime laboratory used microscopic examination and pyrolysis gas chromatography to show that the yellow paint that adhered to the suspect's black truck matched the paint on the victim's yellow car. For further confirmation, the Montana crime laboratory sent the "transferred" yellow paint sample to another laboratory for X-ray fluorescence analysis, which showed that the inorganic elemental composition of the yellow paint was the same in the victim's car as the sample taken from the suspect's truck.

The laboratory further reported that the paint had come from a Japanese car, a fact not disclosed to that laboratory's personnel. How could that laboratory analysist have known this? The answer: The analysis showed that the paint contained *Niobium*, a substance that occurs in titanium oxide (a common ingredient in paint) that is mined only in Japan.

The case went to trial, and though the prosecution had no eyewitness to put on the stand, the paint evidence was strong enough to link the suspect to the crime and convict him of negligent homicide.

Forensic Soil Analysis

Without a doubt, the most overlooked type of trace evidence—and the one that investigators collect least often—is soil, even though soil can relate a suspect to a crime scene. Forensic soil comparison relies heavily on proper collection of soil evidence.

To get meaningful results in a forensic soil comparison, the forensic geologist needs a sufficient number of known soil samples. In most situations, the investigator needs only to take a sample of the top one inch of the soil surface. The investigator should draw a clear map of the area from which the samples have come, showing the two-dimensional relationship among the locations of the samplings. The map is absolutely essential to produce a proper evaluation of the geological relationship among the questioned sample and the known samples.

Montana's criminal justice system is fortunate indeed to have the services of two well-qualified forensic geologists—Dr. Raymond Murray, Associate Vice President for Research, University of Montana, (406) 243–6670; and Dr. John Wehrenberg, University of Montana Geology Department, (406) 243–2341 or 243–5876.

Dr. Murray is the author of *Forensic Geology, Earth Sciences and Criminal Investigation,* and Dr. Wehrenberg has recently finished a sabbatical at the Federal Bureau of Investigation's forensic research facility in Quantico, Virginia. Investigators and prosecutors who need more information about forensic soil examination should call or write to either of these two forensic geologists.

GLASS TYPE	REFRACTIVE INDEX RANGE[2]
Flat glass (plate)	1.5300-1.5120
Headlight	1.4805-1.4745
Bottle	1.5280-1.5100

Figure 5

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Mr. Melnikoff is Chief of the Laboratory of Criminalistics Bureau, Division of Forensic Science, Montana Department of Justice in Missoula, Montana

Criminal Investigations

The Investigative Challenge: Homicide Linked to Conspiracy

Michael F. Shortell

In 1984, Montana recorded 36 cases of homicide. Law enforcement agencies cleared 30 of these, either by arrest or some other means, chalking up a statewide clearance rate of 83.3 percent.[1] The track record of Montana law enforcement on homicides is impressive, compared to clearance rates for other crimes against persons, like robbery (26.4 percent), rape (48.1 percent) and aggravated assault (44 percent).

Several factors explain why law enforcement has been so successful in clearing homicide cases. First, people seldom let a homicide go unreported, so it has one of the lowest "unreported rates" among serious crimes. Second, more than half of all homicides (55 percent) are committed by relatives or acquaintances of the victims, giving police a good starting point in the investigation.[2] And third, murderers often commit their crimes with witnesses watching.

With respect to that 55 percent of homicides in which the murderer is a relative or acquaintance of the victim, law enforcement agencies in Montana usually have little trouble establishing motives and identifying suspects and witnesses. A helpful factor has been the improved quality and availability of homicide investigation training for law enforcement officers throughout the state.

The remaining 45 percent of homicides, however, are not so easily cleared, and statistics in some urban areas show a continuing decrease in "acquaintance" homicides with a corresponding increase in "stranger-to-stranger" homicides.[3] In San Diego, for example, police cleared 93 percent of their homicide investigations in 1970. In 1980, the clearance rate had dropped to 67 percent. During the same period, the percentage of stranger-to-stranger homicides climbed from 30 percent to 47 percent.[4]

Premeditated homicides and those that involve strangers are vastly more complex than acquaintance homicides, from the investigator's point of view. Such crimes usually have motives other than anger or domestic trouble; they are planned; they present tougher problems in the development of evidence, motives and suspects. Premeditated homicides often involve other serious offenses like solicitation, burglary, robbery, theft and conspiracy.

The statistics show that even large, well equipped police agencies find premeditated murders to be a real investigative challenge. Such cases, though, can seem *overwhelming* to small, remote agencies like those in Montana's rural, sparsely populated jurisdictions. Despite the fact that the investigative responsibilities and tasks are the same for two-person and 500-person departments in the investigation of premeditated murders, the small department cannot hope to maintain independently the budget and personnel strength that solving such crimes requires.

A case in point happened in Havre, Montana, in 1984. Havre police officers responded to a call at a local motel. The complainant was the wife of a 68-year-old retired man from Great Falls. The couple was in town to attend the husband's 50th high school reunion. The wife, who told the officers that she was nearly blind, said that two men had entered their motel room, and had beaten and robbed them. She could not find her husband, she said, and had gone to the motel office to get help.

In the room, officers found the beaten and strangled body of the woman's husband. Thus began an investigation that produced evidence to support charges of deliberate homicide and conspiracy to commit homicide against the wife, her son, and two acquaintances whom the son had met in prison.

Although the police identified and arrested the four principals within a week of the murder, the investigation lasted six months. It produced 122 pieces of physical evidence for analysis by the Montana Division of Forensic Science and the Criminal Identification Bureau (both agencies of the state Department of Justice). It involved writing 55 separate officers' reports by investigators, and taking 52 statements from witnesses. It required the application for numerous search warrants and issuance of investigative subpoenas for bank records, airlines documents, savings and loan records, and credit card company data, all of which consumed thousands of man-hours and thousands of dollars to pay for overtime.

From the very beginning the case was a problem in budget and manpower. The Havre Police Department has 15 sworn officers, including the Chief; the department cannot afford full-time investigators to devote exclusively to criminal cases. A case officer or a shift supervisor normally assigns a case to an individual officer. When possible, assignments go to those officers who have training and experience in the relevant fields.

All officers in the Havre Police Department are cross-trained in at least two specialized areas. One officer, for

example, has training in photography and fingerprinting; another in rape investigation and domestic violence response. In the motel homicide case, *every* officer eventually took part in some aspect of the investigation. Because of the magnitude of the case, however, the Chief assigned two full-time officers for the duration. Other officers received assignment to the case for periods of one to three months. Other active cases previously

"Premeditated homicides often involve other serious offenses like solicitation, burglary, robbery, theft and conspiracy."

within the responsibility of the two permanently assigned officers were given to someone else in the department.

Costs in overtime quickly exceeded $4,000, not including court time, a large sum for a department of this size. Travel expenses exceeded $850. Because the Police Department was involved in the investigation of a felony, it asked the Hill County Commission for reimbursement of overtime costs and expenses. Calling upon a state Attorney General's opinion—38 Op. Att'y Gen. No 94 at 323 (1980)—the county declined to reimburse for overtime. The county did, however, reimburse the city for travel expenses that related to the case.

Another major problem was managing the great volume of physical evidence and maintaining the chain of evidence. The amount itself meant that at any given time during the investigation, pieces of evidence were in transit between Havre and the state crime lab in Missoula, more than 280 miles away. Four separate defense attorneys often demanded to see specific evidentiary items at different times, resulting in a scheduling dilemma and more than a few lawyerly frowns and grumbles. The department solved the problem in part by creating an index card file for each item of evidence, as well as an *evidence and laboratory report log*. The log recorded the date on which an item of evidence was sent to or received from the crime lab or the Identification Bureau. A cross-reference to the index was provided by an identifcation number for each piece of evidence in the log. This is now a standard procedure for the Havre Police Department.

Help from other law enforcement agencies was invaluable. Great Falls officers assisted in the search of the suspects' home and the arrest of two people. The Missoula County Sheriffs Office provided people and facilities to help develop evidence that proved to be vital.

Among the Havre investigators' most important decisions in the case was the decision to request the assistance of the Montana Department of Justice and its state Criminal Investigation Bureau (CIB). Section 44-2-115 (1), MCA, states that an agent of the Bureau "shall assist city, county, state, and federal law enforcement agencies at their request by providing expert and immediate aid in investigation and solution of felonies committed in the state." Upon finding indications that the motel murder was a contract killing involving suspects who lived in the Missoula area, the Havre Police Department sent a written request for help to the CIB.

The response was immediate. Within hours a state agent was en route to Missoula in the company of a Havre investigator. Their mission was to follow up leads obtained from a telephone call to the Missoula 911 center, and to act on evidence gotten during interviews. The CIB agent was especially helpful, because he not only knew the Missoula area, but also had a long-time working relationship with Missoula authorities. The CIB contributed valuable additional manpower to the case, as well as a level of expertise that was critical to the development of evidence in support of the conspiracy charges.

As criminals become more sophisticated in their attempts to make money from crime (employing ever more complex conspiratorial and financial arrangements), investigations and prosecutions will rely ever more heavily on *documentary evidence*, as this case did. Future articles in MJQ will deal in greater detail with the problems of gathering, analyzing and preserving both physical and documentary evidence in the investigation of homicide conspiracies. In the meantime, Montana's law enforcement officers need more state-sponsored training in investigating homicides and conspiracies.

In 1985, the wife of the murdered man was found guilty of deliberate homicide by accountability. Six months later her son pleaded guilty to an identical charge. In 1986, a third man pleaded guilty to mitigated deliberate homicide. A fourth man awaits trial on charges of deliberate homicide, deliberate homicide by accountability, and aggravated burglary.

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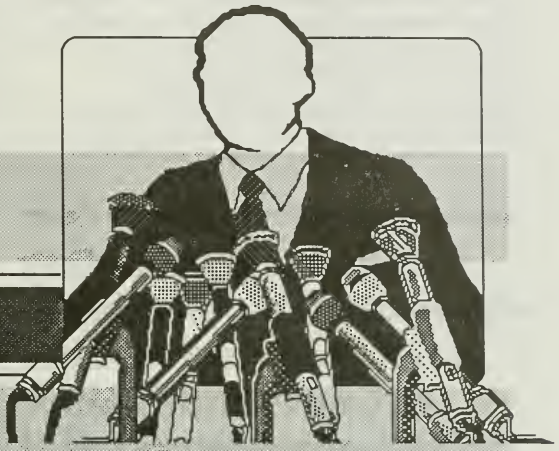
Mr. Shortell is the Assistant Chief of the Police Department in Havre, Montana.

For the Prosecution

by Marc Racicot

Fair Trial and Free Press



The First Amendment to the Constitution of the United States declares that Congress shall make no law abridging freedom of speech or freedom of the press. On the other hand, the Sixth Amendment guarantees an accused person the right to a speedy and public trial before an impartial jury.

Similarly, Section 7 of Article II of Montana's constitution provides that "no law shall be passed impairing freedom of speech or expression," and that "every person shall be free to speak or publish whatever he will on any subject." But Section 24 of Article II of that same constitution—like the Sixth Amendment to the U.S. Constitution—guarantees an accused person a speedy trial by an impartial jury.

Embodied in these constitutional rights are values that inevitably conflict with each other. Unquestionably the rights are of equal value, but prosecutors and police have a clear duty to pay special attention to the fair-trial interests of the accused. In this age of immediate and exhaustive news coverage, that duty weighs heavy, for news coverage can have a profound effect on the "fairness" of a criminal trial. Police and prosecutors are often at the center of news media attention.

Shouldering the duty to protect a defendant's fair-trial interests does not mean that police and prosecutors must operate under a shroud of absolute secrecy, or that they should refuse to give any information at all to the news media. The public has a right to know certain information. A police officer or a prosecutor can fulfill his or her obligations with respect to the defendant's fair-trial interests by steadfastly refusing to give a personal opinion about the case publicly. In addition, police and prosecutors must guard against releasing too much information too soon.

Typically, a police officer or a prosecutor gives a personal opinion or releases too much information immediately after the crime occurs. It is at this time that news media attention is as intense as it will ever become, especially if the crime is bizarre, brutal or grisly. At this point the urge is strong to give out information, opinions and theories. It is also the time period (the initial stage of a criminal investigation) during which restraint is more important than at any other time in the progress of the case.

Extrajudicial comments and disclosures by law enforcement officers and prosecutors, if publicized, can compromise the state's ability to provide a fair trial. They can lead to extraordinary inconvenience and delay, and they can increase the cost of prosecution substantially. In the past, such comments and disclosures have necessitated changes in venue, exclusion orders, continuances, severances, special jury selection procedures and new trials.

The Montana Criminal Justice Information Act (sections 44-5-101 through 44-5-305, MCA), while useful in many respects, does not provide clear direction to criminal justice agencies in formulating policies on pretrial release of information. Rather, the Act emphasizes accuracy and privacy in the collection and dissemination of information by criminal justice agencies. Unfortunately it contains no unambiguous rules about pretrial release of information in given situations. The Act nonetheless appears to create a presumption of nondisclosure. In other words, some types of information should not be disclosed unless one of the Act's exceptions applies.

The constraints of the Act apply to prosecutors and law enforcement agencies alike. Since both are *criminal justice agencies involved in the administration of justice*, both are

(next page)

subject to the Act's restrictions. The Act disallows the dissemination of confidential criminal justice information outside criminal justice agencies. *Confidential criminal justice information* includes virtually all investigative information gathered with respect to a specific crime or crimes. It includes criminal intelligence information, fingerprints and photographs, information and records made confidential by law, and any other criminal justice information not clearly defined as *public criminal justice information.* The Act also restricts dessemination of information from criminal history records, including "rap sheets," fingerprint records and photographs.

Two exceptions, however, allow dissemination of information to the public:

—All court records and deferred prosecution agreements, not otherwise made confidential by law, are *public* criminal justice information.

—Initial offense reports, initial arrest records, bail records and any information that a criminal justice agency thinks necessary to get the public's help in catching a suspect, are also *public* criminal justice information.

Because of the broadness of the Act's exceptions to its equally broad restrictions, the Act seems neither to fly nor light. It hovers. It provides few *specific* guidelines on pretrial release of criminal justice information.

Police and prosecutors, however, can look to another source of guidance. The *American Bar Association Standards Relating to the Administration of Criminal Justice* contain fair-trial and free-press guidelines that articulate standards of acceptable conduct for prosecutors and law enforcement officers in questions of pretrial release of information.

When a crime has occurred, but the police have not yet arrested anyone, the *Standards* let the police disclose to the news media pertinent facts about the crime and the investigative procedures to be used, as long as the released information poses no clear and present danger to the defendant's right to a fair trial. The *Standards* disallow, however, release of the suspect's identity prior to the arrest, or information about the results of the investigative procedures. Such information can be released only if it is absolutely essential to the investigation, i.e., to assist in the apprehension of the suspect or to warn the public of inpending danger.

Examples of information that agencies should *not* release include the *fact* that a lie detector test has been given; the *fact* that an lineup has occurred; the *fact* that fingerprints have been taken; and the *results* of these or similar procedures. Unless an agency has a compelling reason to do otherwise, it should disclose only the kind of offense that occurred, the location and time it occurred, the identity of the investigating agency and other similar facts.

Generally speaking, prosecutors and police can disclose the following information after the arrest but prior to trial, and still comport with the *Standards:*

"Shouldering the duty to protect a defendant's fair-trial interests does not mean that police and prosecutors must operate under a shroud of absolute secrecy..."

—Biographical information about the arrested person (name, age, address, employment, marital status, etc.).

—The substance or text of the criminal charge (as it appears presently, or as it will appear in the complaint or information).

—The identity of the agency that conducted the investigation and made the arrest.

—The length of time that the investigation took.

—The amount of bail.

—The immediate circumstances of the arrest (time and place, whether resistence or pursuit occurred, whether weapons were involved).

The *Standards* also allow disclosure of the following information, *though such disclosure is not recommended unless the agency sees a compelling reason to do so*:

—Victims' names, unless such information is otherwise made confidential by law.

—The arrested person's denial of the charges.

—A description of items seized upon arrest or discovered during a search.

The following examples are types of information that police and prosecutors should *never* disclose before trial:

—The arrested person's prior criminal record or the "rap sheet."

—Opinions about the arrested person's credibility, anticipated testimony, character, or reputation (This applies to prospective witnesses, too).

—Opinions about the arrested person's guilt or innocence.

—Opinions about the merits or the evidence in the case.

—Statements about the appropriate length or nature of the sentence, or the sentence that the prosecutor will request upon conviction.

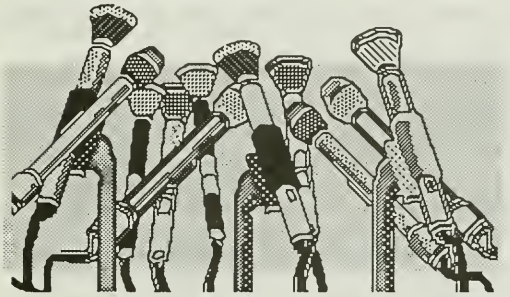
—The fact that the arrested person gave a statement, or refused to give a statement, or the contents of that statement.

—The fact that examinations or tests occurred, or the fact that the arrested person submitted to them or refused to submit to them.

—A statement about the possibility of a guilty plea to the offense as charged or to a lesser offense (or other disposition).

—Statements concerning any other information or facts that investigators or prosecutors know to be inadmissable as evidence at trial.

Prosecutors and police, like most other citizens, enjoy seeing their names in print. To seek recognition is a natural



human instinct. Exploiting a situation in pursuit of personal celebrity, however, or trying to influence the course of a case through publicity, is not merely unprofessional. Such behavior is often damaging to the prosecution's ability to provide a fair and impartial trial. The resulting prejudice frequently cuts both ways, undermining the interests of both the prosecution and the defense.

Before meeting the press concerning a specific case, a prosecutor or a law enforcement officer should become intimately familiar not only with the Montana Criminal Justice Information Act, but also with the American Bar Association's *Standards.* Moreover, all law enforcement agencies and county attorneys' offices in Montana should establish a clear policy concerning the pretrial release of information about criminal cases. Setting such a policy should be a priority not only for the large agencies in urban jurisdictions, but also for small agencies in rural areas. The problems of extrajudicial comments materialize not only in metropolitan centers where crime rates are comparatively high, but also in the most sparsely populated jurisdictions, where life is relatively tranquil. In short, such problems can arise regardless of a jurisdiction's size, population, location, crime rate or history of criminal activity. Every law enforcement agency and prosecutor's office needs a policy.

"Prosecutors and Police, like most other citizens, enjoy seeing their names in print."

Mr. Racicot is chief of the County Prosecutor Services Bureau of the Montana Department of Justice. The Bureau assists county prosecutors with major felonies, and coordinates training activities for the state County Attorneys.

Networking

Accessing the NCIC:

The "Person" Files

Karen Nelson and Dan Hawkins

During the month of February, 1986, law enforcement officers in Montana made more than 19,000 routine, automated inquiries into the Wanted Person File of the National Crime Information Center (NCIC).[1]

Why so many?

Because law enforcement officers know that such "routine" inquiries have led to the apprehension of countless wanted persons, and have solved many criminal cases.

The *wanted person inquiry* is unique. It launches a simultaneous search by NCIC of its Wanted Person File, its Canadian Warrant File, the U.S. Secret Service Protective File and the Missing Person File. The NCIC will respond with a "hit" or a possible match under one or more of the following conditions:

–An active record in one of the files matches the name and the date of birth specified in the inquiry.

–An active record in one of the files contains a match of the *numeric identifier* that the inquiry provides, e.g., the social security number, the driver license number, the passport number, or any other number that is unique to the wanted person.

–An active record in one of the files contains a match of the motor vehicle identification number or the license plate number that the inquiry provides.

On September 13, 1984, the ABC television series "20/20" told the story of Sheila Virginia Jackson, a flight attendant for Eastern Airlines. Ms. Jackson had experienced considerable misfortune: law enforcement authorities in Louisiana had detained her after a routine inquiry into the NCIC's Wanted Person File. The response revealed an outstanding parole violation by a woman who had used the name *Sheila Virginia Jackson* as an alias. Even though the physical descriptions of the Eastern flight attendant and the parolee did not match, the police detained the flight attendant for five days. Sadly, an understanding of the NCIC Wanted Person File might have prevented this unfortunate situation.

The Wanted Person File presently has more than 200,000 active records.[2] Any authorized criminal justice agency may enter a record into the file, if the entry meets the NCIC's criteria: those criteria require that a criminal justice agency have in its possession a federal warrant, a felony warrant, or a serious misdemeanor warrant for the wanted person; also, the originating agency must have made the determination—with the maximum possible certainty—that extradition will occur if the wanted person turns up in another state. Any limitation on the terms of extradition (for example: extradition will occur only if the wanted person is found in a nearby state) must be stated and included into the record.

The originating agency is responsible for the accuracy and completeness of all data. That agency also assumes the responsibility for removing the record from the system in a timely way, once the warrant is no longer serviceable.

A hit on a routine inquiry is not in itself probable cause for an arrest, a fact that the Louisiana authorities who detained Sheila Jackson found out the hard way. The agency who receives the hit must first compare all the data in the record to the person who is the target or the reason for the inquiry. If the comparison shows substantial differences in physical description, or if the record states clearly that extradition will not occur because of limitations, then the agency should take no further action. In the event that the subject matches the description in the record, the inquiring agency must confirm the validity of the record with the agency who originated that record. According to the NCIC Operating Manual, *confirming the record* means getting extradition information and verifying with the originating agency "that the warrant is still outstanding, [and that] the person in question is identical with the subject of record." The rules allow ten minutes for the agency who originated the record to respond to a request for confirmation.

Every year millions of people stream back and forth over the boundary between the U.S. and Canada, which is one of the longest, most active and least restricted international boundaries in the world. A small percentage of those transboundary throngs are fugitives from justice. Since 1980, the Federal Bureau of Investigation has maintained an NCIC file of Canadian warrants in order to prevent the United States' becoming an assylum for those who have committed crimes in Canada.

The Canadian Warrants File contains more than 27,000 records on fugitives who are wanted on criminal charges throughout Canada.[3] All the crimes represented in the

record—and they make up a wide variety—are ones for which Canada and the United States have extradition agreements. Though the physical location of the automated file is the NCIC facility in Washington, D.C., responsibility for maintaining it belongs to the legendary Royal Canadian Mounted Police (RCMP).

A hit from the Canadian Warrants File is not in itself probable cause for arrest, but it may justify a reasonably long investigative detention. Whenever NCIC responds to an inquiry with a match from the Canadian Warrants File, it includes a warning and an advisory to this effect, cautioning the inquiring agency not to arrest someone on the strength of the Canadian warrant alone, and advising contact with the RCMP to make arrangements for extradition. In these matters cooperation among U.S. and Canadian authorities has been nothing short of superb.

Even newer than the Canadian Warrants File is the United States Secret Service Protective File. Established in 1983, it has already drawn a seemingly inordinate amount of attention, considering that it contains a scant 70 records.[4] Unique among the NCIC files, it serves as an intelligence and tracking device, and is never the basis for arrest or detention. The file is a collection of records on people whom the Secret Service deems potential threats to those it protects. Only the Secret Service can originate records in the file, modify them or cancel them.

"Law enforcement officers know that 'routine' inquiries have led to the apprehension of countless wanted persons, and have solved many crimes."

Any law enforcement officer who checks NCIC for "wants and warrants" generates an automatic search of the USSS Protective File. When the NCIC computer finds a possible match in that file, it notifies the inquiring officer that the Secret Service considers the subject a potential threat. Then the NCIC notifies the Secret Service, who updates its tracking and intelligence system accordingly.

Entering a Wanted Person record also triggers an automated search of the USSS Protective File. If a hit or a possible match occurs, the NCIC notifies the Secret Service, who then evaluates the possible relationship between the criminal activity of record and potential threats to the people whom it protects.

The Missing and Unidentified Persons Files are different in many respects from other NCIC files. They serve as central repositories of information that police agencies find useful in performing duties that may not relate to criminal activity, but are nonetheless important to the public. The design and the procedures of the NCIC database cause matches between these files to be almost automatic.

Criminal justice agencies may add to the nearly 50,000 records[5] of the Missing Persons File in any of five categories:

—Individuals who are missing and, because of some physical, mental or emotional disability, may be a danger to themselves or others. Entries of this type must be supported by written statements from a physician or other authority who is qualified to diagnose the disability.

—Persons who are missing, and because of the company they are in, are believed to be in danger. Such entries require supporting documentation from the subject's family or some other knowledgeable authority.

—Persons who are missing under circumstances that suggest foul play. Law enforcement often uses this category—"involuntarily missing"—if kidnapping is a possibility but no solid proof of kidnapping is yet in hand. Such entries require written documentation from appropriate authoritative sources.

"A hit on a routine inquiry is not in itself probable cause for an arrest, a fact that the Louisiana authorities found out the hard way."

—Juveniles who are missing, but who don't fit any of the other categories. Typically, law enforcement uses this category to enter records on runaways. Agencies should take into account such factors as the juvenile's state of residency, marital status and military status, all of which affect the "age of emancipation," and the juvenile's status under the law.

—Presumed victims of catastrophic accidents and natural disasters. Because of the confusion and vaguery that often surround major calamity, the NCIC has relaxed the previously restrictive rules that governed this category. Today the NCIC requires no written documentation with an entry; any public agency who is involved in identifying victims of such an event may enter records.

The Unidentified Persons File is a repository of 1,166 records on unidentifiable people, dead bodies and body parts.[6] Within the file are categories that differentiate among living

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people, dead bodies, parts of bodies and parts that authorities have associated with catastrophic accidents or natural disasters.

Privacy considerations prohibit law enforcement agencies from entering into this file descriptions of any living person unless he or she is unable to identify himself voluntarily. Infants and people who suffer from amnesia or other severe mental or physical disability may fall into this category.

The NCIC's computers can often match records into which law enforcement agencies have entered information on less than whole bodies. This matching process does not occur automatically, however; an agency who enters information on a less than whole body must intitiate an inquiry to the Unidentified Persons File, using the same information.

The Missing and Unidentified Persons Files are possibly the most complex of the NCIC's files, and they certainly include records of the greatest size. This is because the wealth of information available from the families of missing people (or from the unidentified people themselves) is useful in getting matches. The files include the usual information on a person's sex, race, color of hair and eyes, weight and build, etc.; but they can also contain dental and medical records, X-ray data, corrective lens prescriptions, descriptions of clothing and many other kinds of helpful information. The complexity and size of these records truly express the essence of the science of human identification.

The files covered in this article—the Wanted Person File; the Canadian Warrant File; the U.S. Secret Service Protective File; the Missing Person File; and the Unidentified Person File—are only five of the twelve NCIC files that are available to Montana's criminal justice agencies through the Criminal Justice Information Network (CJIN). Each file is unique. The NCIC has established separate and very strict procedures and rules for using each one.

"The complexity and size of these records truly express the essence of the science of human identification."

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Ms. Nelson is a computer operations specialist and Mr. Hawkins is the training officer in the CJIN Services, Montana Department of Justice.

Fire and Arson

the Arson Investigation

Robert Nieuwenhuyse

We have doused the flames. The billows of dark, toxic smoke and gases have cleared. The interior of the structure is a mass of soggy, charred debris.

Now what do we do?

Montana law and the standards of good practice dictate that we must determine the cause of every fire. The scope of this operation may range from a "look-see" by the people who fought the fire to a full criminal investigation that involves not only the fire department, but also various law enforcement agencies. The following overview should assist those public safety professionals who find themselves in a position to contribute their various talents and expertise to a fire investigation.

A basic understanding of the properties and behavior of fire is essential. All fires have the following common factors:

—A fuel or a combustible material.

—A supply of oxygen that will sustain the combustion process.

—A source of heat that is sufficient in amount and intensity to vaporize and ignite the fuel in the presence of oxygen.

—An *act* or *omission* that allows the fuel, oxygen and heat to interact and cause the fire.

Though every individual fire will burn in a unique manner, several universal principles govern heat transfer, i.e., the way fire spreads:

Conduction is direct contact between the flame and a flammable material, or the transmission of heat through a material.

Convection is the process in which currents of heated smoke and gases move generally upward.

Radiation is the outward spread of heat waves that a burning object produces.

The fire investigator should remember that a combination of the three kinds of heat transfer can occur simultaneously. For example: a campfire warms the area around it by radiation, while convected smoke and heat rise; if the tip of a metal rod were placed in the fire, the opposite tip would soon be hot because of conducted heat energy. All three processes occur at the same time.

Through the means of heat transfer, a fire *propagates;* that is, the fire spreads, extends, or continues burning upward, downward or horizontally. In *upward propagation* the updraft of heated air and gases spreads the fire upward through vertical openings like elevator shafts and stairwells. In *horizontal propagation* the fire spreads on the same level, helped by air currents, perhaps, or by the presence of adjacent fuel (or because the fire is confined to that level). In *downward propagation* the fire spreads downward, usually when liquid accelerants are present, or when combustible liquids have saturated the floor over time. Fire may also spread downward when burning material drops to a lower level.

Fire tends to sweep upward until it meets an obstacle. Then it travels horizontally, or "mushrooms," until it can venture upward again. If the flames meet a vertical impediment after mushrooming (like a wall), the flames may reach downward a short distance if they are present in sufficient quantity. Fire, like water, seeks the path of least resistance.

Other factors also affect heat transfer and the subsequent spread of fire. Among these are such variables as the composition and quantity of combustible materials, the availability of air, wind currents and ventilation.

Finding the place where the fire started, the "point of origin," is a critical aspect of fire cause determination. Once the investigator makes an accurate determination of where the fire started, he can conduct a careful examination to discover the intitial burning object or substance, as well as the heat source that caused the ignition.

A primary method in determining the point of origin is to establish where the fire did *not* start. The investigator initiates the search on the exterior of the structure, noting general construction features, the state of the utilities, and indications of the most intense heat buildup. He also searches for any items that an arsonist might have lost or discarded while fleeing the scene. The investigator should thoroughly document this

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external examination with photographs, just as he should every other phase of the physical scene processing.

Investigators generally establish the point of origin by tracing back the burn patterns from the area of least damage to the point where charring is the most severe. Fires burn upward. Logically, the point of origin is at the point of lowest burn. Because fire consumes fuel in direct proportion to the burning time, the place where charring is deepest is the place where the fire burned the longest, and possibly the place where the fire originated. As a general rule, only about one-third of the heat generated during a fire will remain at floor-level; the remaining two-thirds goes upward toward the ceiling. This "up and out" burning leaves distinct *V* patterns in and on remaining structural members. Following the *V* to its apex often leads to the point of origin.

Like all general rules, however, these have exceptions. The last area of a burning building to be extinguished may have sustained the longest burn time, causing charring to be heavier here than at the actual point of origin. The same effect may be attributable to a "high fuel load," the presence of fuels that burn quickly and especially hot, or merely a higher quantity of fuel. Also, drafts and falling burning materials may have caused low-level burning and secondary fires.

Having found the point of origin, the investigator must observe and evaluate the burn patterns in all directions, comparing each against the other. If he finds deviations from the norm that are attributable to delayed extinguishment, fuel-loading or building construction, he should include explanations of these deviations in his report.

After carefully noting all objects, debris and indicators at the point of origin, the investigator should make a determination of whether the fire started accidentally or at the hand of an arsonist. Accuracy is of paramount importance in this determination. Because a finding of arson may have to stand on its own merit in court without the support of admissions, motives or witnesses' statements, the investigator should first eliminate all possible accidental causes.

The following are accidental causes that the investigator should explore and eliminate, if possible:

Electrical and mechanical failure or malfunction. Did a short circuit in the wiring cause the fire, or did the fire cause the short circuit?

A meteorological phenomenon. Could a bolt of lightning have struck the house, causing the fire?

Unintentional burning. Was Junior playing with matches again?

Spontaneous ignition. Were those rags in the corner of the basement soaked with boiled linseed oil?

Misuse of materials or equipment. Had a smoldering cigarette dropped into the couch? Had someone placed combustibles too close to the furnace?

Fires do not "just happen:" each has its own cause. The investigator must identify, establish and document the specific act that brought a fuel into contact with a source of heat in the presence of oxygen.

As the investigation progresses toward determining (or eliminating) a cause of the fire, the investigator should consider using outside resources to help him. The Montana Laboratory of Criminalistics in Missoula can assist in the identification of possible flammable liquids used as accelerants. The National Weather Service can document the possibility of a lightning strike, as well as the wind direction and speed, and other meteorological conditions on a given day. The Montana Criminal Identification Bureau can confirm the presence (and possibly the owner) of fingerprints on a piece of evidence.

All investigators should understand that every investigative procedure must conform to legal guidelines and requirements. A firmly rooted precept of the law is that every fire must be presumed accidental until *proven* otherwise beyond a reasonable doubt. *Suspicion* of arson is not good enough. To prove that a fire was set intentionally, the investigator must not only establish the exact location and manner in which the fire was set, but also show that the fire could not have started by accidental means.

Most crimes are self-evident. A house with a broken-down door and all its contents missing indicate burglary, for example. To establish arson, however, the investigator must meet the following three requirements, in order: (1) Establish that a burning occurred; (2) establish that it happened by design, rather than by accident; and (3) establish that the accused person is responsible for the act. Without these three elements, there is no arson.

"Fire, like water, seeks the path of least resistance."

Experience has shown that certain types of fire setters often set certain types of fires. Understanding the motivation of the fire setter may assist the investigator in relating types of fires to particular groups or individuals.

Chief among the causes of arson is fraud, frequently to collect insurance money. The arsonist might have lost his job, and is thus unable to pay his bills and mortgage installments. Or he may simply be disposing of a condemned building that is cheaper to burn than to have removed by a contractor—especially if insurance money is in the offing. Or the motivation may be an estate settlement; insurance money is easier to divide among heirs than real property with a building on it.

The motivation to commit arson could arise from extended periods of economic recession or impending business failure. It could arise from changes in traffic patterns that damage businesses which rely on traffic. A store owner might burn his establishment because his merchandise and equipment are obsolete. Another owner might want to redecorate, believing that the fire insurance money would be a good way to pay the cost of redecoration. Urban development is sometimes a motive: an owner burns out low-paying tenants in order to make room for high-paying ones.

Pyromania, the uncontrollable impulse to start fires, sometimes involves sexual gratification. Fires set by true pyromaniacs are usually small ones (or are intended to be small), and usually occur close to where the pyromaniac lives, but seldom in the building he occupies.

Arsonists sometimes set fires to conceal other crimes, intending the fire to conceal or destroy evidence of embezzlement, theft, burglary, homicide, or suicide. On the other hand, the arsonist may intend the fire to divert the authorities' attention away from some other criminal activity.

Yet another motivation for arson is *vanity*. The arsonist may try to bring favorable attention to himself by "discovering" and putting out the fire that he himself set. Such fires are *staged* fires, intended to bring accolades from fellow citizens and the owner of the building for "saving" the property and the lives of the people who live there.

Spite and revenge are common motives, and arsons thus motivated are often the most deadly. In these cases, fire is the weapon of someone who wants to be away from the act of violence at its most violent stage. Termination of a love affair or loss of a job might kindle a hunger for revenge. Spiteful motives like racial hatred and religious bigotry are common. Arson may also occur in the wake of a labor dispute. It can be a political statement, an act of disobedience against the "establishment" by dissidents or terrorist organizations.

"Spite and revenge are common motives, and arsons thus motivated are often the most deadly."

Children often set fires. Between the ages of 4 and 12, children have a natural curiosity about fire, and they often play with matches and lighters. Their fires frequently occur in concealed locations, like closets or under beds, where lighting a fire generates a sense of power against the feared darkness.

Investigating a fire is tedious and dirty work. The investigator must sift through blackened debris, staying constantly on the alert for something that seems improper amid the remains. The investigator must continually ask himself, *What is here that does not belong here?* And equally important, *What is not here that should be?*

If the fire occurred in a house, the investigator should check for items like photograph albums, jewelry and firearms—things of intrinsic value to the occupant, that would be difficult to replace. The arsonist who is motivated by fraud generally takes care to remove "precious" belongings before setting the fire, and to ensure that the residents of the building are protected. A failing businessman will often ensure that file cabinets are left open in order to destroy irreplaceable records. The angry and recently ejected patron of a tavern will direct his "revenge fire" at the entrance of the establishment.

A complete fire cause investigation should be no less exacting than an investigation of any other crime. The investigator's lack of attention to detail becomes apparent in the courtroom. Like any other criminal investigator, the arson investigator must approach all aspects of the case with determination and care; crime scene processing, statements from witnesses, photographs, physical evidence—all are critical to the case. The investigator must keep in mind the basic tenets of professional law enforcement and the legal doctrines that guide criminal investigations.

Anyone who needs assistance or more information about fire and arson detection and investigation should write to or call:

Fire Marshal Bureau, Montana Department of Justice
303 Roberts
Helena, Montana 59620
(406) 444-2050

Mr. Nieuwenhuyse is a Deputy State Fire Marshal.

Traffic Enforcement

Traffic Accident Investigation: An Overview

Lieutenant Colonel Robert J. Griffith
MHP

Many drivers have an almost cocky confidence in their ability to avoid accidents through their own driving skill, and that confidence seems to increase with the age of the driver. The National Safety Council recently issued a report that describes the state of traffic safety in the 1990's, relying in part on a survey by Tekneknor Research, Inc., (conducted for the National Highway Traffic Safety Administration).[1] That report contained some startling information.

The Tekneknor survey found that an overwhelming majority of drivers—82.5 percent—believe that they have "a lot of control" or "almost total control" in preventing their personal involvement in traffic accidents. More than half the drivers who were 50 or older believe that they have "almost total control." In a curious contradiction, though, 80 percent of all drivers say that the most likely causes of accidents that involve them personally will be something *beyond their control*, and half of them blame the other driver. Nearly half believe that they have only one chance in 500 of being involved in an accident within a year's time, while only one in four were realistic on that score: in actuality, the odds are one in seven that any given driver will be involved in an accident during any one-year period.

Studies like the one mentioned above show that most drivers have unrealistic expectations about accidents, and equally unrealistic perceptions about their own driving skill. With respect to the driving environment of the future, such studies often raise more questions than they answer. Analysts, however, can draw several conclusions, based on studies and current trends.

First, the future will see more drivers on the roads and highways. People will do more driving than they do today, and the average age of those drivers will be older than it is today.

The cars themselves, on the average, will also be older. By 1990, the average car on the streets and highways of America will be ten years old. In the early part of the 21st century that average age will increase to 22 years.[2]

Cars of the future will be more costly to maintain, meaning that drivers are likely to postpone repair of bad suspensions, faulty brakes and broken lights—the mechanical troubles that often cause accidents. And the inevitable increases in congestion and traffic flow will mean more frayed nerves for these older drivers in their older cars. Finally, there is no reason to believe that drivers of the future will be any more realistic about their own driving skills than drivers of today.

So, what's the bottom line?

Traffic accidents will happen in the future, just as they happen today. Law enforcement will continue to shoulder the responsibility of investigating those accidents and pinpointing the causes. The importance of that job may even grow.

Regrettably, too many law enforcement officers merely *report* accidents, rather than *investigate* them. Too often, apathy and laziness strike those officers who have the training and experience to conduct proper accident investigations. The result is merely a *report* which lacks the information that a genuine investigation could have provided.

Accident investigation is the process of obtaining, recording, refining and interpreting information. The officer's first priorities, however, are to *protect the scene, care for the injured* and *protect the property of those whom the accident involved.*[3] After taking care of these priorities, the officer has an obligation to determine the cause behind the mishap, if that determination is possible.

The accident investigator assembles a package of information that must be available to the prosecutor and to those who were involved in the accident. This package of information is essential to the prosecutor, in the event that he brings criminal charges as a result of the accident. It is also important to any civil lawsuit that one or more of the accident victims might file. A fair and impartial accident investigation aids the process of settling claims, an extremely important service that some law enforcement officers only reluctantly acknowledge as part of their jobs.

The investigator's package of information has other uses, too. Engineers who work for cities, counties and the state use such data to identify defects in roads, traffic signs and lights. Correcting these defects can prevent future accidents and reduce government liability. Law enforcement analysts use the same information to identify trends and patterns in the occurrence of accidents. Using these trends and patterns, law enforcement administrators establish programs of *selective enforcement*, which direct officers into those areas where accidents are most likely to occur. Such enforcement practices make effective use of scarce law enforcement resources, not only by placing officers close to the scenes of potential mishaps, but also by discouraging unsafe driving behavior.

When an accident occurs, the investigator undertakes a discovery process that lays fact upon fact, clue upon clue, in order to frame deductions that bring the cause or causes into ever

sharper focus. Of paramount importance is the investigator's ability to look at the *whole* picture in assessing possible causes.

The investigator must reconstruct an accurate picture of the mishap, giving it sufficient detail to enable a court of law to arrive at commonsense conclusions about the behavior of those who were involved. The measuring stick of an investigator's competence is the ability to recognize facts and infer from them a truth that is not immediately apparent to an untrained person. Though juries function as fact finders, they are often comprised of untrained people. They must rely on the investigator's findings as the starting point for commonsense conclusions about who is or is not at fault in an accident.

"Regrettably, too many law enforcement officers merely *report* accidents, rather than *investigate* them."

Consider the following example.

Accident investigators know that a vehicle may experience several collisions in the same accident. It may sustain impacts on the front end, the side and the rear panel from the same vehicle. The original impact may launch a vehicle into the path of another, or deflect it against a pole or a tree, before it ever comes to rest. Thus, the accident investigator can use *vehicle damage* analysis—one of the most important aspects of traffic accident reconstruction—to determine how an accident occurred. Having gleaned and interpreted the evidence that every accident produces, in this case the vehicle damage, the investigator presents facts that no one can dispute successfully. These facts may corroborate or supplement witnesses' statements; they may prove or disprove theories about what happened; they may guide future investigations; or they may help a jury decide who is at fault through commonsense deduction.[4]

Photography is an important part of accident investigation. A well planned and properly focused picture gives accurate detail that a written narrative could never provide, even though the narrative might be a dozen pages long (and hours in the drafting). To ensure that photographs are useful as evidence, the investigator must identify and catalogue them, including labeling data about the conditions under which the photograph was taken, the position of the camera and the direction it was facing. The accident notes should include a technical record of the type of film used, its speed and the camera settings.

Witnesses to an accident sometimes present the investigator one of his greatest challenges. People who offer themselves as witnesses often are not witnesses at all, but merely passersby who happened upon the scene after the accident occurred. They become swept up in the emotion and excitement; they view the situation, draw uninformed conclusions and convince themselves that they were present at the moment of the mishap. On the other hand, late-arriving witnesses often give excellent information about an accident victim's location and behavior during the unfolding drama in the aftermath of the accident. The investigator must have the ability and the inclination to separate the wheat from the chaff.

An accident that is run-of-the-mill to a seasoned investigator can be a traumatic experience for the drivers and passengers who are involved. Most accident victims (if they survive) will relive and retell their ordeal for the rest of their lives. They will remember vividly how well or how poorly the investigating officer handled the matter, how well or how poorly they themselves were treated. Each retelling either enhances or impugns the investigating officer's credibility and public respect. With these realities in mind, the investigator should strive not only to demonstrate technical competence and professionalism in conducting the investigation, but also human decency and compassion.

Law enforcement administrators throughout the state should reaffirm their commitment to professional and responsible traffic accident investigations, for the results are well worth the effort. Following is a basic checklist that will help an officer meet the minimum requirements of a good accident investigation:[5]

—Protect the scene of the accident.

—Aid the injured.

—Arrange transportation for the injured to a medical facility.

—Identify the accident victims and witnesses.

—Inspect the vehicles and the roadway for physical evidence that may indicate the causes and factors of the accident.

—Measure the accident scene.

—Photograph the accident scene.

—Safeguard the property of those who were involved.

—Arrange for the removal of the damaged vehicles from the roadway, and oversee that removal.

—Determine whether the roadway is safe for the resumption of travel.

—Report any hazardous roadway conditions to the proper authority, and safeguard if necessary.

—Notify the families of the seriously injured victims, telling them where the victims are located.

—Mark and label the evidence.

—Provide essential information to the news media, if requested.

—Prepare the accident report.

—Organize the information and present it to the local prosecutor for appropriate action (filing criminal charges or further investigation).

A well written descriptive narrative should accompany the accident report, telling the reader the *who, what, when, where, why* and *how* of the accident. The narrative should provide essential information without analysis of the official accident report and diagram.

Although the checklist above is not all-embracing, it does direct the officer's attention to the most common and fundamental processes of accident investigation. Within the general context of traffic safety, accident investigation must rank as an equal to all the other law enforcement priorities. No other

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function has a greater direct effect on society's ability to cope with the reality of traffic accidents. Investigation determines the causes and the fault. Knowing these, government can mobilize its resources to reduce the number of accidents.

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Lieutenant Colonel Griffith is Chief of the Field Force Bureau, Montana Highway Patrol Division.

ComCenter

Readers Like MJQ

Just a brief note to offer my warm congratulations on Volume 1, Number 1 of the Winter 1986 *Montana Justice Quarterly*. Your premiere issue is one of which you should be very proud, and my staff, as well as I, will read it with great interest.

NEIL F. HARTIGAN
Attorney General
State of Illinois

I have received the initial copy of *Montana Justice Quarterly*, for which I thank you very much. This is an impressive publication and I enjoyed with great interest each of the articles. You can be proud that this is a Montana magazine, for and by Montana law enforcement officers. The format is appealing. I am sure it will be well accepted by everyone [and] I look forward to future issues.

HAL VOGELSANG
Hal Vogelsang Investigations
Butte, Montana

Congratulations on the first issue of *Montana Justice Quarterly*. It's an impressive, professional effort, and I look forward with pleasure to future issues. Keep up the good work.

GORDON BROWDER
Chairman
Montana Board of Crime Control

Disagrees With Racicot

After reading the first issue of the *Montana Justice Quarterly*, I find your publication to be informative, concise and well laid out. I read with particular interest Marc Racicot's article entitled "Montana's New Discovery Law." While I have the utmost respect for Mr. Racicot's abilities as a prosecutor, I disagree with one of his contentions regarding the new discovery law.

Mr. Racicot states that, prior to the new discovery law, the defendant's tactical advantage of taking the prosecution by surprise was negated by "...the high probability that the prosecution would seek a continuance to prepare rebuttal." Needless to say, a good prosecutor attempts to anticipate and prepare for the defense's case. I doubt, however, that there are many prosecutors who seek a continuance of a jury trial to prepare rebuttal, and I surmise that there are even fewer judges who would grant such a continuance.

As a final note, I was surprised during my own career as a prosecutor to find how seldom many defense attorneys took advantage of the procedures available to them under the old discovery law. If I were a prosecutor today, I would be irritated with the new discovery law, which in effect automatically makes many discovery motions on behalf of the defense attorney.

SHAUN R. THOMPSON
Attorney
Helena, Montana

Next Issue:

Criminal Investigations

Contributing Editor Gary Carrell and his staff of criminal investigators will present the second installment in the series on *investigating homicides that are linked to conspiracies.*

For the Prosecution

Shaun Thompson, a former deputy prosecutor in Lincoln County, will offer the benefit of his experience on the *relationship between the prosecuting attorney and the criminal investigator in the investigation of felonies.*

Motor Vehicles

Daryll Schoen, Chief the Registrar's Bureau, Montana Motor Vehicle Division, will offer advice to local law enforcement in disposing of junked and unclaimed vehicles.

And more!

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